

WHAT IS CLAIMED IS:

1. A thermometer assembly comprising a housing, a bore within said housing, and a temperature sensing assembly comprising a mandrel
5 having first and second sections, the first section supporting a resistance temperature sensing element, wherein the first section of the mandrel is positioned in the bore and surrounded by particulate material in the bore, and the second section of the
10 mandrel is positioned in the bore and surrounded by a rigid potting material in the bore.

2. The thermometer assembly of claim 1 wherein the bore has a first portion surrounding the first
15 section of the mandrel and the bore has a second portion of larger diameter than the first portion, the second portion surrounding the second section of the mandrel.

20 3. The thermometer of claim 1 wherein said particulate material supporting the first section comprises a material selected from the group consisting of aluminum oxide, magnesium oxide, boron nitride and aluminum nitride.

25 4. The thermometer assembly of claim 1 wherein said particulate material is a heat conductive, electrically insulating powder having particles of a sieve size of less than 325 mesh.

5. The thermometer assembly of claim 1 wherein the particulate material is a powder with a mean particle size of about 45 microns or less.
- 5 6. The thermometer assembly of claim 1 wherein said rigid potting material comprises an epoxy material.
- 10 7. The thermometer assembly of claim 1 wherein said temperature sensing element comprises a platinum resistance wire wound on the first section of the mandrel.
- 15 8. The thermometer assembly of claim 3 wherein the particulate material is aluminum oxide powder having a mean particle size of about 7 microns.
9. The thermometer assembly of claim 2,
20 wherein the bore portions are connected by a shoulder surface, and the rigid potting material forms an end cap adjacent the shoulder for retaining the particulate material in the first bore portion.
- 25 10. The thermometer assembly of claim 1 wherein the housing has a coefficient of thermal expansion substantially greater than the mandrel.

11. The thermometer assembly of claim 10 wherein the housing is made of aluminum, and the mandrel is made of a platinum-rhodium alloy material.

5 12. The thermometer assembly of claim 1 wherein said second section of the mandrel is rigidly supported, the first section being cantilevered from the second section.

10 13. The thermometer assembly of claim 12 wherein the first section comprises the sole support for the resistance temperature sensing element.

14. The thermometer assembly of claim 1 wherein
15 the bore has an inner end surface and wherein the first section has an end surface spaced from the inner end surface, and separate insulating material filling a space between the inner end surface of the bore and the end surface of the first section.